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into the cytoplasm, where they break up into finely granular masses called yolk nuclei. The yolk nuclei become more or less diffused through the cytoplasm, and, especially toward the egg membrane, give rise to the yolk platelets, which are at first minute, but grow during the winter to large size. Thus the nuclealbumin of the yolk platelets is derived from the nucleoproteids of the nucleus.¹ Whereas I am entirely ignorant of the steps by which a nucleoproteid might be changed into a nuclealbumin, the phosphorus content of the egg nuclealbumins (.4-1.5 per cent.) is about the same as that of the native nucleoproteids studied by Halliburton.² We might compare the migrating nucleoli to the trophochromatin of the protozoa and metazoa.³ Whereas the nucleolus is more acidophilous to stains than the idiochromatin (chromosomes), it is more basiphilous than the general cytoplasm, and I see no objection to calling it trophochromatin. Goldschmidt⁴ found the chromidia (trophochromatin) of some protozoa to give rise to "glanzkörper" or glycogen granules which might be compared in function to the yolk platelets of the frog's egg.

Whereas I found that the nucleoli were of greater specific gravity than the nuclear sap, and could be thrown out of the germinal vesicle by centrifugal force, there is no indication that gravity aids in the normal extrusion of the nucleoli. Such migration of nucleoli is a wide-spread phenomenon in animals and plants.⁵

J. F. McCLENDON

UNIVERSITY OF MISSOURI,
May 15, 1909

THE STRUCTURE OF LILY PISTILS

IN an extended study of the structure of the pistils of Liliaceæ some results have been reached that warrant the publication of this

¹ The amphibian nucleolus is said by Carnoy and Lebrun to contain a small amount of nuclealbumin.

² *Jour. of Physiol.*, Vols. 17 and 18.

³ Cf. Moroff, *Arch. f. Zellforschung*, Vol. 2.

⁴ *Arch. f. Protistenkunde*, Vol. 5.

⁵ Walker and Tozier, *Quart. Jour. of Exper. Physiol.*, Vol. 2.

preliminary note pending the completion of the work.

The pistils of the lilies are in general alike. However, certain differences exist among them (1) in regard to the formation of the partition walls of the ovary and (2) in regard to the development of the ovules. It is the prevailing opinion among botanists that the margins of the carpels in the Liliaceæ infold to form the partition walls of the ovary and also to produce the ovules. This is true of some lilies but it is not true of all lilies. It has been found that certain lilies develop the partition walls of their ovaries, also their ovules, from the middle portion of their carpels. In this type of ovule-production the midribs of the carpels become thicker, push in to the central axis of the ovary, unite and produce the ovules.

The following plants have been found to develop their ovules from the midribs of their carpels: *Lilium longiflorum* Thunb., *Lilium longiflorum eximium* Nichol., *Lilium candidum* Linn., *Erythronium albidum* Nutt., *Convallaria majalis* Linn., *Tradescantia bracteata* Small, *Zebrina pendulata* Schnitzl., *Tulipa* sp.

CHARLES E. TEMPLE

THE UNIVERSITY OF NEBRASKA

SOCIETIES AND ACADEMIES

THE IOWA ACADEMY OF SCIENCE

THE twenty-third annual meeting of the Iowa Academy of Science was held at the State University, Iowa City, on April 31 and May 1. A public meeting was held on the evening of April 30 for the presentation of the address of the president, Professor Samuel Calvin, on "The Work of the Iowa Geological Survey," and a lecture by Professor William A. Locy, of Northwestern University, on "The Service of Zoology to Intellectual Progress." Before the beginning of the evening program Professor C. E. Seashore gave demonstrations of the tonoscope in his laboratory.

In the progress of the two sessions of the academy the following papers were presented:

Comet C, 1908 (Morehouse): D. W. MOREHOUSE.

An account of the comet discovered in September, 1908, while photographing at the Yerkes Observatory.

The Polyporaceæ of Fayette, Iowa: GUY WEST WILSON.

Some Parasitic Polyporaceæ: C. D. LEARN.

The present paper embodies the results of a field study of the commoner local species of the family. The economic and pathological aspect of *Polyporus ignarius*, *P. fulvus*, *P. everhartii* and *Elfvigia megaloma* are discussed.

An Anatomical Study of the Roots and Rhizomes of a Few Weeds: L. H. PAMMEL and ESTELLE D. FOGEL.

It is a very common practise in agricultural literature to refer to the rhizomes of quack grass and germander and other ground stems of this kind as roots. The morphology indicates that these are stems beyond a doubt. On the other hand the underground portions of the milkweed, Canada thistle and horse nettle are also referred to as roots by the farmer and correctly so, and yet quite a number of botanists have fallen into the error of calling these structures stems. The common morning glory is a stem. The histological structure shows beyond a doubt that they are true roots.

The More Important Factors concerned in the Production of Plant Diseases: L. H. PAMMEL and CHARLOTTE M. KING.

A brief survey and review of the fungus diseases occurring upon cultivated plants for twenty-five years in the state of Iowa. Giving dates for the epidemics of rusts and causes leading up to it, also a discussion of the more general problems of plant diseases and their relation to climatic conditions.

Plant Distribution in Iowa in Relation to Geologic Formations: B. SHIMEK.*The Sand-dune Flora of Iowa*: B. SHIMEK.*The Flora of Iowa Rock, a Small Rocky Island in Puget Sound*: ROBERT B. WYLIE.*Notes on Spore Formation in Ulva*: ROBERT B. WYLIE.*Slime Moulds of the Yosemite*: THOMAS H. McBRIDE.

Preliminary report: (1) the locality: (a) altitudes, (b) general climatic conditions; (2) the season of collecting, and conditions influenced by altitude; (3) list of species taken, with notes; (4) probable results of further explorations.

Okoboji Laboratory: THOMAS H. McBRIDE.*Some Features of Iowa Ground Waters, II.*: W. S. HENDRIXSON.*The Training of the Technical Chemist*: J. S. STAUDT.

This paper and the one following were presented

before the Iowa Section of the American Chemical Society and were read before the academy by invitation.

The Influence of Copious Ingestion of Water: STELLA A. HARTZELL.*A Hysteresis Curve*: D. W. MOREHOUSE and HARRY WOODROW.*The Googler Primary Cell*: HARRY WOODROW.*On the Use of the Balance*: LEROY D. WELD.*The Fifth and Seventh Cranial Nerves of Plethodon glutinosus*: H. W. NORRIS.

A criticism of a recent paper by Dodds. The supposed anomalies in the fifth nerve of *P. glutinosus* are found to fall into line with the common arrangement in urodele amphibians.

The Migration of Nervous Elements into the Dorsal and Ventral Nerve-roots of Pig-embryos: ALBERT KUNTZ.

Embryological evidence is presented to show the fact of migration of nervous elements from the neural tube of the embryo into the dorsal and the ventral nerve-roots. An attempt is made to determine the nature of such migrating cells. General inferences touching neurological problems.

The Unios of the Muscatine County Loess: B. SHIMEK.

The following papers were read by title:

The Asteroid, 1906, W. E.: ELLIS B. STAUFFER.*Further Studies of the Eastern Nebraska Flora*: CHARLES E. BESSEY.

Studies are now being made in the department of botany of the University of Nebraska of the plants now and formerly used by the Indians of eastern Nebraska, especially the Omaha tribe. It is found that many species of plants were formerly used that are not now in use, and within the last few years some plants have been brought into use that had not been previously used. It is hoped that a preliminary report can be made by the middle of the year.

The Estimation of Arsenic and Cobalt in Smaltite: NICHOLAS KNIGHT.

The complicated reactions, oxidation of the arsenic with chlorine. The separation of cobalt. The change in the valence of cobalt from two to three.

An Analysis of the Fruit of Viburnum nudum: NICHOLAS KNIGHT.

A continuation of the chemical study of wild fruits from Sylvan Beach, New York. The extraction and determination of the sugars. The organic acids. The extractions of the oils with ether.

The simplification equivalent of the oils. The weight of the ash and the determination of the ash constituents. The per cent. of the various constituents of the fruits.

The Action of Manure on a Certain Iowa Soil:
E. B. WATSON.

The Solubility of Portland Cement Proved: G. G. and A. J. WHEAT.

The advanced studies on cement are demonstrating the power of water, at normal temperatures to dissolve and carry through a double filtering crucible. The silicates of lime and the aluminate of lime, as silicates and aluminates and these same dissolved silicates refuse to yield their calcium to HCl, but do yield after the soda carbonate fusion.

Some Geological Effects of Artificial Drainage in the Wisconsin Drift Region: G. G. and A. J. WHEAT.

Significance of Thrust-planes in the Great Basin Ranges: CHARLES R. KEYES.

The recent discovery of thrust-planes in certain of the desert ranges of the Great Basin region and of late Tertiary strata severely flexed and infolded with early Tertiary lava flows is taken as indicating that the entire region has been subjected to great compression during late geologic times and not to pulling strains that would produce profound normal faulting. The recent-fault theory for the origin of these mountains is therefore very seriously questioned.

Orotaxial Correlation of Geologic Terranes and Diastrophism: CHARLES R. KEYES.

The similarity of the two methods is pointed out and their great value emphasized as means of exact correlation of geologic formations. Attention is also called to the fact that the proposition of this method was presented before this academy more than a dozen years ago and a full decade prior to the general acceptance of the principles by geologists generally. It supplants the methods by means of fossils.

Carbonic Column of the Rio Grande Region:
CHARLES R. KEYES.

The results of some recent observations are briefly discussed, as bearing upon the Carbonic history of our Iowa rocks. The Carbonic section of the region is very much more complete than in the Mississippi Valley; and in fact more extensive than anywhere else on the North American continent.

Hydroids as Ornamental Plants: C. C. NUTTING.
Arterio-sclerosis: W. E. SANDERS.

Birds of Polk County, Iowa: LESTER P. FAGEN.
Some Observations on the Embryology of Chironomus: W. N. CRAVEN.

L. S. ROSS,
Secretary

DES MOINES, IA.

THE TORREY BOTANICAL CLUB

THE meeting of April 28, 1909, was held at the New York Botanical Garden, with Dr. Tracy E. Hazen in the chair.

Dr. William A. Murrill, chairman of the cryptogamic section of the committee on the local flora, made a report in which the following suggestions were submitted:

(1) The publication of keys and lists of local species for field use; (2) the preparation of a map of the territory included; (3) cooperation with other botanical clubs within or bordering on this territory; (4) cooperation with the field committee in the selection of suitable places for excursions and the care of cryptogamic material collected on these excursions; (5) the use of a given space in *Torreya* for notes upon and additions to the local flora; (6) a joint meeting at an early date with the phanerogamic section of the committee on local flora.

The scientific program consisted of a discussion of "The Cactuses of the West Indies" by Dr. N. L. Britton.

The speaker referred to the distribution of cacti in the West Indian Islands and the regions inhabited by them; these are mostly on the southern side of the larger islands, where the rainfall is very low and where these plants are very abundant, certain portions of the southern side of eastern Cuba and of Jamaica being actual cactus deserts. On the smaller islands the cacti grow less abundantly and mainly at low altitudes. The genus *Rhipsalis* forms an exception to the general xerophytic distribution, its species growing on trees and cliffs in relatively moist regions. Southern Florida contains several species similar to some of those growing on the Bahamas and in Cuba or identical with them. After a preliminary description of the plants the meeting adjourned to the propagating houses of the New York Botanical Garden, where specimens of living cacti, including nearly all the known species of the West Indies, were exhibited and described.

PERCY WILSON,
Secretary